



October 2003

## AFRL research seeks advanced translation capabilities

*by Fran Crumb, Information Directorate*

ROME, N.Y. — Military translators and intelligence analysts will be the primary beneficiaries of technology being sought by the Air Force Research Laboratory's Information Directorate.

The directorate has awarded a two-year, \$1 million contract to StreamSage Inc. of Washington, D.C., for technology development that will focus on the language, which enables foreign languages to be converted into English with a minimum of human translation or training.

"Interlingua" technique, a type of "universal translator," or intermediary language, which enables foreign languages to be converted into English with a minimum of human translation or training.

"We are finding ourselves short-staffed in trained linguists in areas of the world we are interested in today," said Stephen E. Smith, program manager in the directorate's Information and Intelligence Exploitation Division. "Interlingua will allow us to more quickly adapt to a new language-of-interest for military and intelligence purposes," Smith said. "If there is a trouble spot in the world where we have no linguists, this will allow us to train systems in a new language using large amounts of written documents."

Highly automated and software-intensive, the new technology would pair up meanings of phrases in both English and the new language. That way when somebody speaks in the new language it can extract the meaning of what was spoken.

"Interlingua extracts the intent of what was spoken," Smith said. "This gets away from speech processing and translation

solutions used today that are point solutions — a limited number of scripted phrases for translating questions and answers."

The proposed technology would remain limited in its domain, geared to words and phrases of special interest in tactical military situations. It could also be applied to a variety of intelligence purposes focusing on identifying specific information in signals of interest.

The StreamSage contract continues more than four decades of pioneering research in translation and speech processing by Air Force researchers in Rome.

In 1960, engineers successfully demonstrated the first Automatic Language Translator Russian-English. The translator's dictionary, containing 70,000 entries, was located in the equipment's photoscopic memory. At the time, the equipment only translated word-by-word and ignored grammatical rules. Even so, it provided a good sense of the gist of any given Russian article. More recently, a voice translation machine that translated spoken English into spoken Russian, Arabic and Spanish and vice versa was demonstrated in 1996 to Air Force and Army Special Operation Forces.

The Automatic Spoken Language Translation technology was originally applied to the military domain of field interrogation. In that application, the technology was used as a tool for novice interrogators to "screen" potential, non-English-speaking informants. This technology has applications to any situation where English speakers need to interact with foreign-language speakers, including law enforcement personnel and medical workers.

Michael R. Ferenti of the directorate's Contracting Division negotiated the StreamSage agreement. @